Volunteer Lake Assessment Program Individual Lake Reports
PLEASANT LAKE, DEERFIELD, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,240	Max. Depth (m):	19.8	Flushing Rate (yr¹)	0.4	
Surface Area (Ac.):	493	Mean Depth (m):	7	P Retention Coef:	0.78	
Shore Length (m):	7,200	Volume (m³):	13,995,000	Elevation (ft):	578	

TROPHIC CLASSIFICATION

Year	Trophic class
1982	OLIGOTROPHIC
1996	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

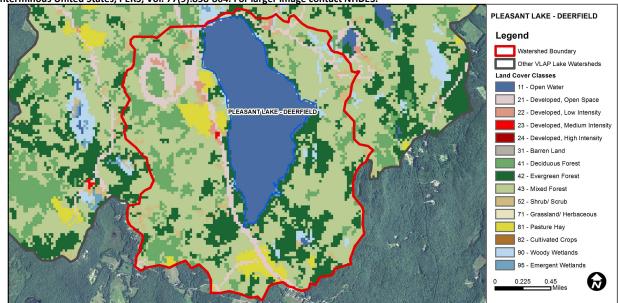| Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Bad	There are >10% of samples (minimum of 2), exceeding criteria with one or more samples considered large exceedance.
	Dissolved oxygen satura	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Chlorophyll-a	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

PLEASANT LAKE - VEASEY PARK BEACH	Escherichia coli	Good	There are geometric means and all geometric means are < geometric mean criteria; and there has been a single sample exceedance.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.

Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	20.9	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	5.72	Deciduous Forest	9.74	Pasture Hay	3.79
Developed-Low Intensity	0.73	Evergreen Forest	14.84	Cultivated Crops	0
Developed-Medium Intensity	0.05	Mixed Forest	40.54	Woody Wetlands	1.49
Developed-High Intensity	0	Shrub-Scrub	1.86	Emergent Wetlands	0.06

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

PLEASANT LAKE, DEERFIELD

2014 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics*)

- **CHLOROPHYLL-A:** Chlorophyll levels were slightly above average in June and then decreased to low levels in September. The 2014 average chlorophyll level decreased slightly from 2013 and was less than the state median. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- **CONDUCTIVITY/CHLORIDE:** Deep spot conductivity and epilimnetic (upper water layer) chloride levels were slightly greater than the state median. Historical trend analysis indicates relatively stable epilimnetic conductivity with moderate variability between years. Conductivity and chloride levels in Clarks Brook and Wilsons Brook were also slightly above average in June but samples were not collected in September as tributaries were not flowing. Philbrick Brook and Loon Cove conductivity and chloride levels were within a low to average range in June.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were very low and much less than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years. Metalimnetic (middle water layer) phosphorus levels were low and decreased from June to September. Hypolimnetic (lower water layer) phosphorus levels were elevated in September and the turbidity was also elevated suggesting bottom sediment contamination or the formation and accumulation of organic compounds in hypolimnetic waters as the summer progresses and dissolved oxygen levels decrease. Clarks Brook, Loon Cove and Philbrick Brook phosphorus levels were elevated in June during low flow conditions.
- **TRANSPARENCY:** Transparency measured without the viewscope (NVS) was slightly below average for the lake but remained better than the state median. Historical trend analysis indicates stable transparency since monitoring began. Transparency measured with the viewscope (VS) was much better than that measured without and likely a better representation of actual conditions.
- **TURBIDITY:** Epilimnetic and metalimnetic turbidities were low. Hypolimnetic turbidity was elevated in September either from bottom sediment contamination or the accumulation of organic compounds in hypolimnetic waters as the summer progressed and dissolved oxygen levels decreased. Clarks Brook, Loon Cove and Wilsons Brook had slightly elevated turbidities during low flows and a small amount of sediment was noted in the samples.
- **PH:** Epilimnetic and metalimnetic pH levels were within the desirable range 6.5-8.0 units in June and then decreased below the desirable range in September. Hypolimnetic pH levels were less than the desirable range in June and September. Tributary pH levels were generally less than desirable. Historical trend analysis indicates highly variable epilimnetic pH since monitoring began.
- **RECOMMENDED ACTIONS:** Increase monitoring frequency to once per month during the summer, typically June, July and August to better assess seasonal trends as well as provide input into the upcoming development of a watershed restoration plan. Great work on securing grant funds to develop a watershed restoration plan!

Station Name	Table 1. 2014 Average Water Quality Data for PLEASANT LAKE								
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	3.05	2.77	15	70.0	3	5.15	6.23	0.80	6.53
Metalimnion				70.2	5			0.96	6.51
Hypolimnion				73.6	10			4.65	6.00
Clarks Brook			18	86.2	40			2.69	5.14
Dam Outlet In Stream				69.6	6			1.40	6.66
Loon Cove				48.7	36			2.30	6.46
Philbrick Brook			3	18.5	21			0.71	5.50
Wilsons Brook			14	84.1	11			1.51	6.46

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: > 230 mg/L (chronic)

E. coli: > 88 cts/100 mL – public beach

E. coli: > 406 cts/100 mL – surface waters

Turbidity: > 10 NTU above natural level

pH: between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L

Chlorophyll-a: 4.58 mg/m^3

Conductivity: 40.0 uS/cm

Chloride: 4 mg/L

Total Phosphorus: 12 ug/L

Transparency: 3.2 m

pH: 6.6

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data highly variable.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.

Historical Trend Epilimnetic Conductivity and pH

Historical Deep Spot Chlorophyll-a, Epilimnetic Total Phosphorus & Transparency Data

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